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HOSPITAL DESIGN NOTE 3

THE I.H.B PROGRAMME COMPONENTS AND ASSEMBLIES

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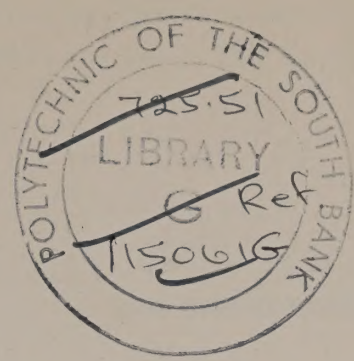
19 JAN 1976

The IHB Programme components and assemblies

-1. DEC. 1975



Ministry of Health Hospital Design Note Number 3

4 partitions

6 door assemblies

8 windows and claddings

9 ceilings

10 signposts

12 storage units

14 floor finishes

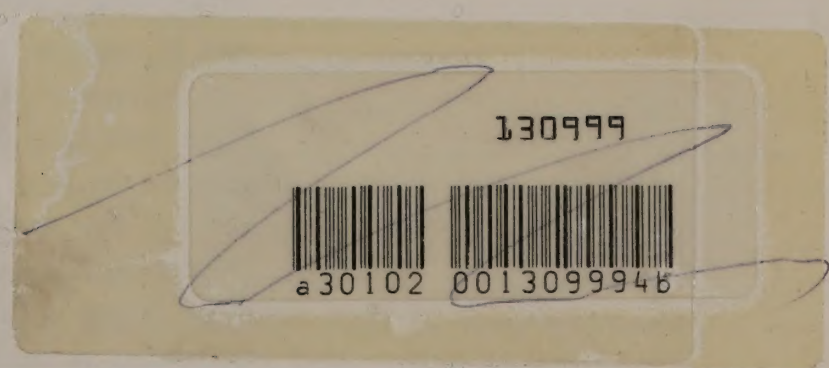
16 sanitary fittings and assemblies

17 structures

18 external works

19 user requirements

20 communications



Foreword

1 This Note illustrates how methods of design manufacture and construction which have been proved in industries other than the building industry can be used to help to design and build better hospitals more rapidly and more economically.

2 Traditional building methods, which rely on an increasing supply of skilled designers and artisans, cannot any longer cope with the amount of building work which has to be done in the country. The objective therefore is to industrialise hospital building so as to increase productivity. Attainment of this objective will depend largely on the extent to which it is possible to utilize and develop common techniques in all stages of planning and construction over the whole programme.

Co-ordination is the key

3 The greatest scope for the extension of industrialisation in construction lies in the production of standard ranges of components and assemblies which can be manufactured and constructed on factory industrialised principles in alternative ways to meet the requirements of each project.

Working needs of hospitals

4 This Note records the work done so far for hospital buildings. It shows the development of some standard, limited ranges of components which are all co-ordinated dimensionally with each other and will fit any building designed on the national pattern of preferred dimensions promulgated by the Ministry of Public Building and Works and adopted for all Government building in this country[1]; and it also illustrates the management techniques related to the use of the components.

5 A successful industrialised building programme depends upon:

developing standard components which meet specific needs;

co-ordinating these components dimensionally and ensuring that with the proper details they fit with each other and with traditional building components;

encouraging manufacturers to make these components at competitive prices;

guaranteeing sufficiently large and continuous markets for the product.

bringing the producer, the product and the purchaser together;

co-ordinating with other building programmes[1].

6 Study of the functioning of a hospital makes it possible to design building components to serve those functions. Industrialised components based upon such studies give better results than individual custom-designed articles, because the manufacturer is presented with a clear cut definition of the requirements he must meet, and the standardised item is cheaper to produce than individual items made to order—1,000 identical items cost less per unit than the same item ordered singly.

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Dimensional Co-ordination

7 When the dimensions—length, depth and thickness—of all components and spaces are based on the same principles (dimensionally co-ordinated) and with proper detailing of the joints, the components will fit together with each other and with traditional components. Dimensional co-ordination thus allows the requirements of the designer to be reconciled with those of the manufacturer and the constructor. Furthermore, the integration of mechanical engineering services, in terms of their location and the spaces they need, is especially important in hospital building. Dimensional co-ordination makes it possible for these factors to be taken into account so that mechanical services can be related to the structure at a very early stage in planning, with a

consequent reduction of cost in design time, and in the time and cost of supply and installation of these services.

I.B.S.G.s and performance specifications

8 Inter-Board Study Groups[2] were formed in 1962 to work out specifications for those components required in hospital building which could most satisfactorily be included in an Industrialised Hospital Building (IHB) Programme based on these principles. The Architectural Groups concentrated on

Floor finishes
Partitions
Door assemblies
Windows and claddings
Storage
Signposts
Ceilings
Structures
Sanitary fittings

and also studied the detailed requirements of hospital users and the external works (car parking, roads and footpaths, landscaping, etc.) which surround the hospital building.

9 Fundamental to the work of these Groups was the co-operation of manufacturers in developing these specifications into actual building products. Their contribution is gratefully acknowledged.

Encouraging manufacturers

10 Productivity rises when manufacturers produce long runs of standard items. This simplifies their job, because it allows workers, tools and time to be geared to a predictable and continuing level of demand. Thus if the market is large enough, manufacturers will always be willing to make the items, and competitive prices can be established.

Guaranteeing the market

11 Collectively, hospitals form a large market for building components. But in order that this market can be made available, the components must be efficient for their purpose, satisfactory in their performance, competitively priced, and delivered on time. The components have been designed with these requirements in mind.

Bringing the producer, the product and the purchaser together

12 A Compendium has been produced describing the IBSG components and specifications which are currently available, and which conform with all the tests described above ; and listing sources of supply.

13 This Note and the Compendium deal with the work of the Architectural Study Groups. Further publications will deal with the work of the Engineering and Quantity Surveying Study Groups.

Use of 1", 4" and 1' 0" preferred dimensions.
Ministry of Public Building and Works Publications.
DC1, DC2, DC3 (Dimensional Co-ordination for Industrialised Building)
Ministry of Health Hospital Design Note No. 1.

[2] So called because they include representatives of Regional Hospital Boards, Private Architects, Engineers and Quantity Surveyors, the Ministry of Health, Scottish Home and Health Department, the Welsh Board of Health and the Northern Ireland Ministry of Health & Social Services. The Health Departments for the United Kingdom gratefully acknowledge the contribution made by these representatives. Each of the Study Groups will be producing a short report on its work.

partitions

1. The aim of this Group was to develop partitions which are economical and bear favourable comparison with traditional techniques and:

are capable of speedy erection;

involve as little wet construction as possible;

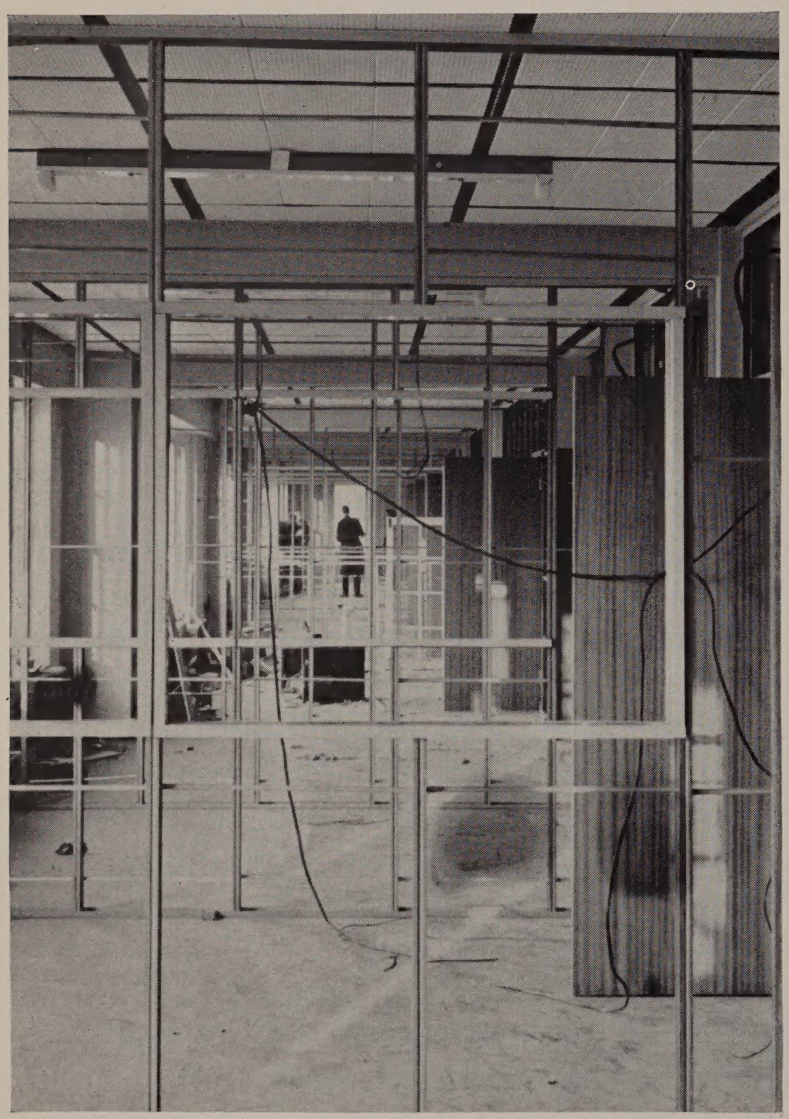
have adequate provision for the running of all normal mechanical engineering services;

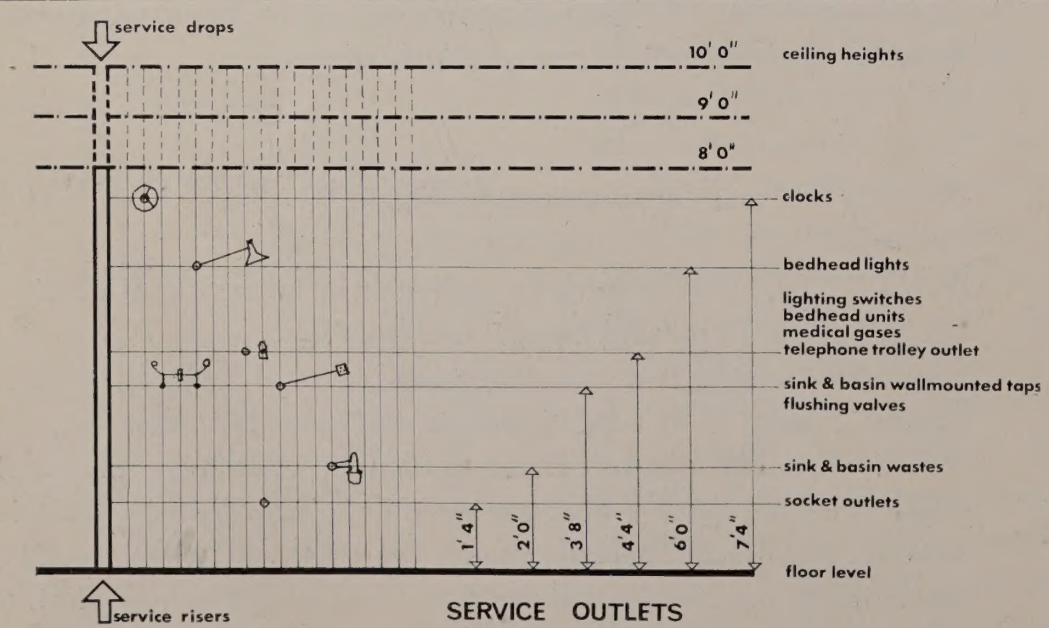
conform to the dimensional criteria established for hospital building and related to other components;

have suitable physical properties.

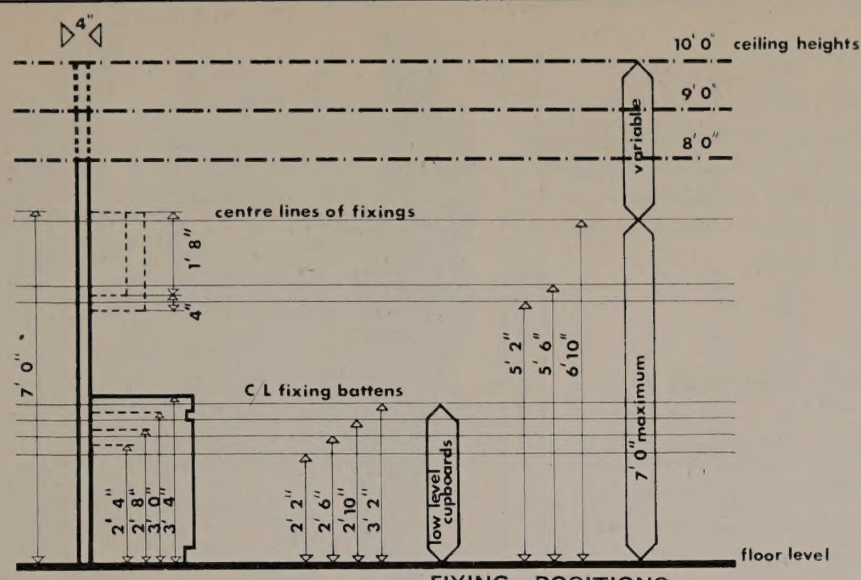
2. The Group drew up a performance specification for the dimensional and physical properties required. Selected manufacturers submitted samples of partitions constructed in different materials to meet this specification.

3. **Partitions are now available in the three main preferred floor to ceiling heights for hospitals 8′ 0″, 9′ 0″ and 10′ 0″. A supply and erection service is provided by the manufacturers.**





SERVICE OUTLETS



FIXING POSITIONS

door assemblies

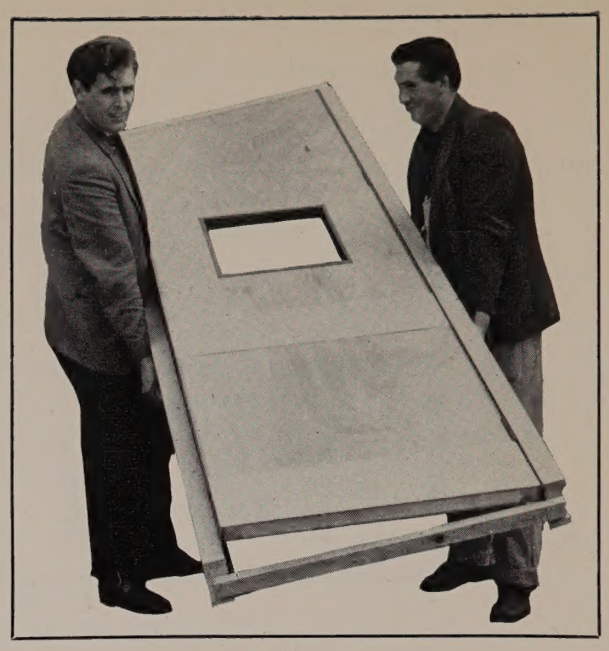
1. In the traditional form of door construction the provision, erection and finishing of the door assembly consists of at least three separate trade operations. The aim of the Study Group was to reduce these operations by supplying, as a single floor to ceiling assembly, the door hung on its frame, with panel over, ironmongery fitted and finishes applied in the factory, and delivered complete for fixing on the site. In some cases the final decoration may be applied on the site.

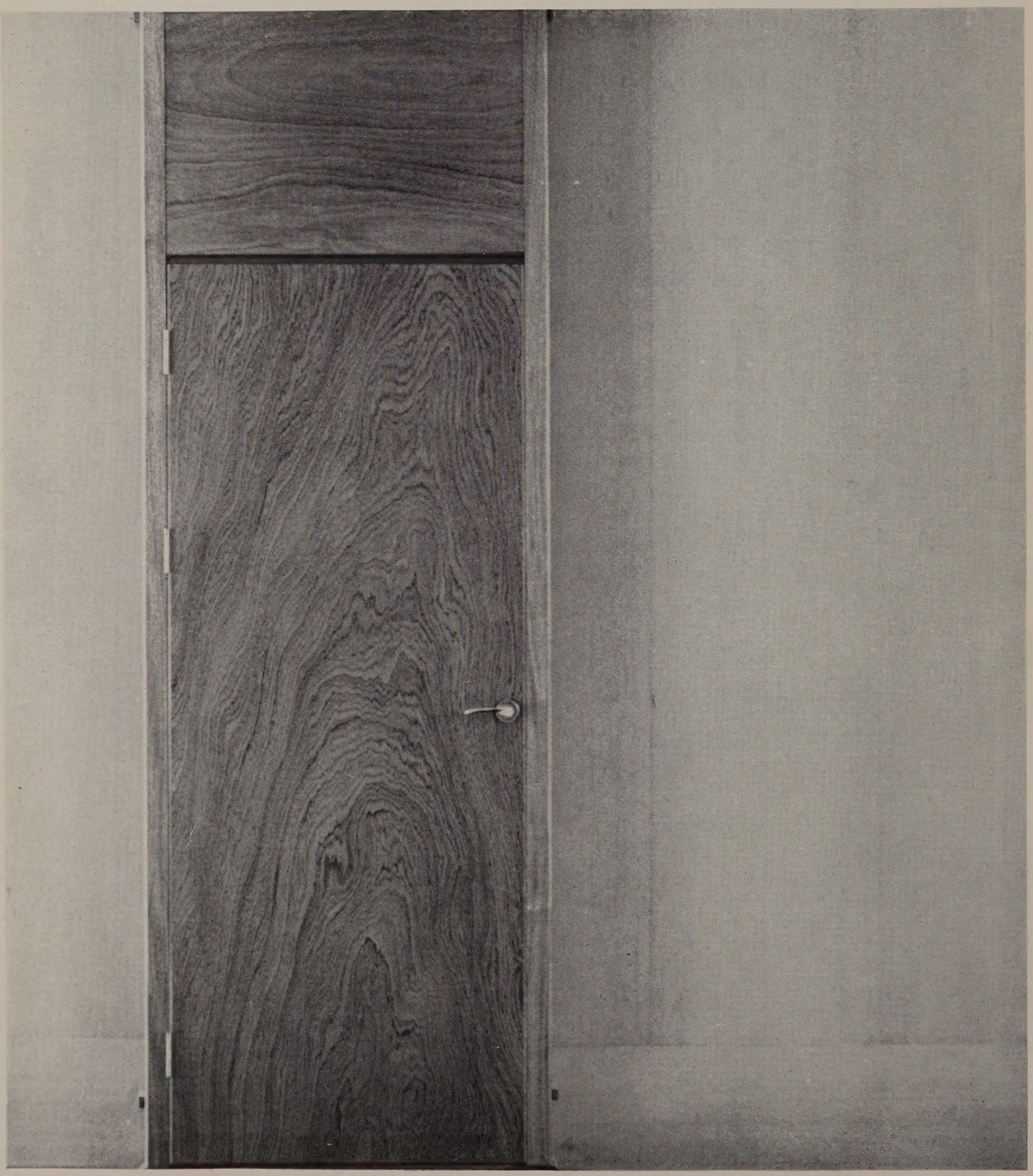
2. The Study Group drew up specifications for:

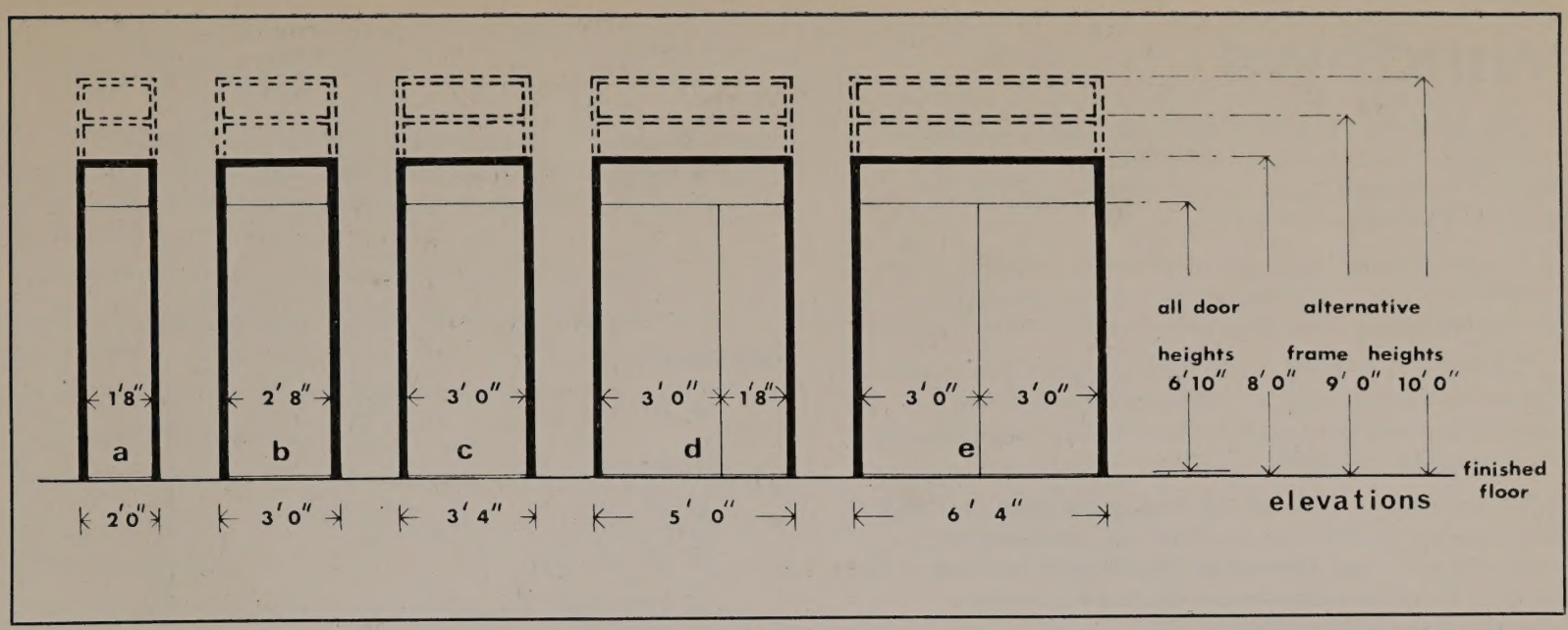
dimensions
width and height of openings and vision panels to satisfy hospital needs

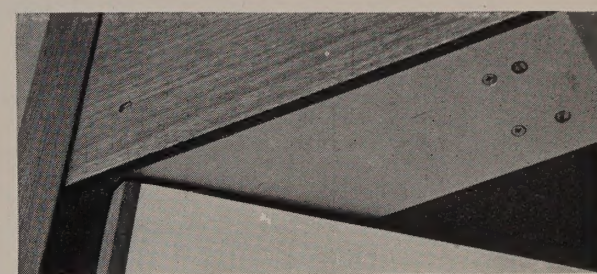
physical properties
ease of operation, control of noise, strength and protection against damage.

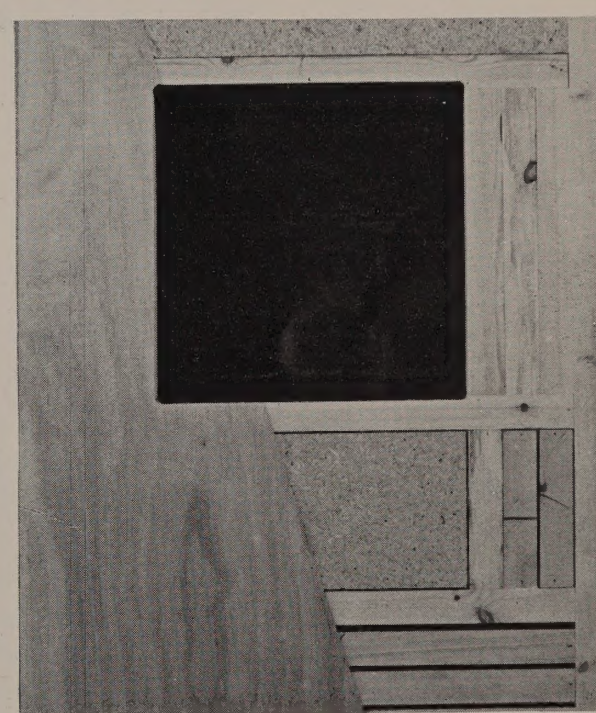
3. **A range of door assemblies is now available. These are supplied as a composite unit for internal single and double doors, suitable for most uses. The assemblies are based on the use of timber. Studies of the use of other materials are continuing.**

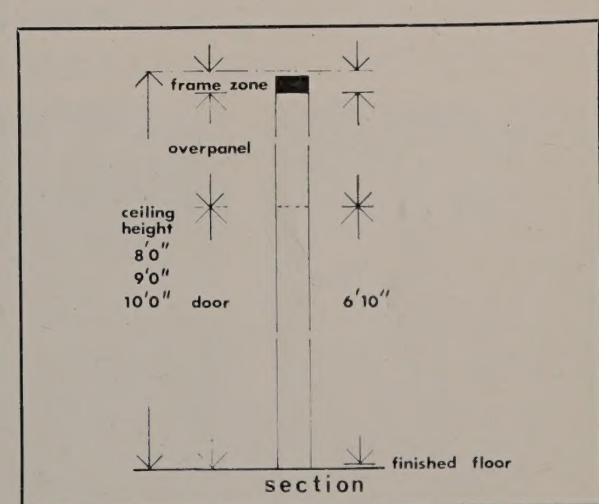


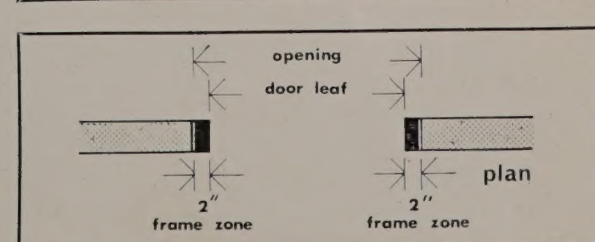



1'8"
2' 8"
3' 0"
3' 0"
1'8"
3' 0"
3' 0"
a
b
c
d
e
2'0"
3'0"
3'4"
5' 0"
6' 4"
all door heights
alternative frame heights
6'10"
8'0"
9'0"
10'0"
finished floor
elevations






frame zone
overpanel
ceiling height
8'0"
9'0"
10'0"
door
6'10"
finished floor
section


opening
door leaf
plan
2"
frame zone
2"
frame zone

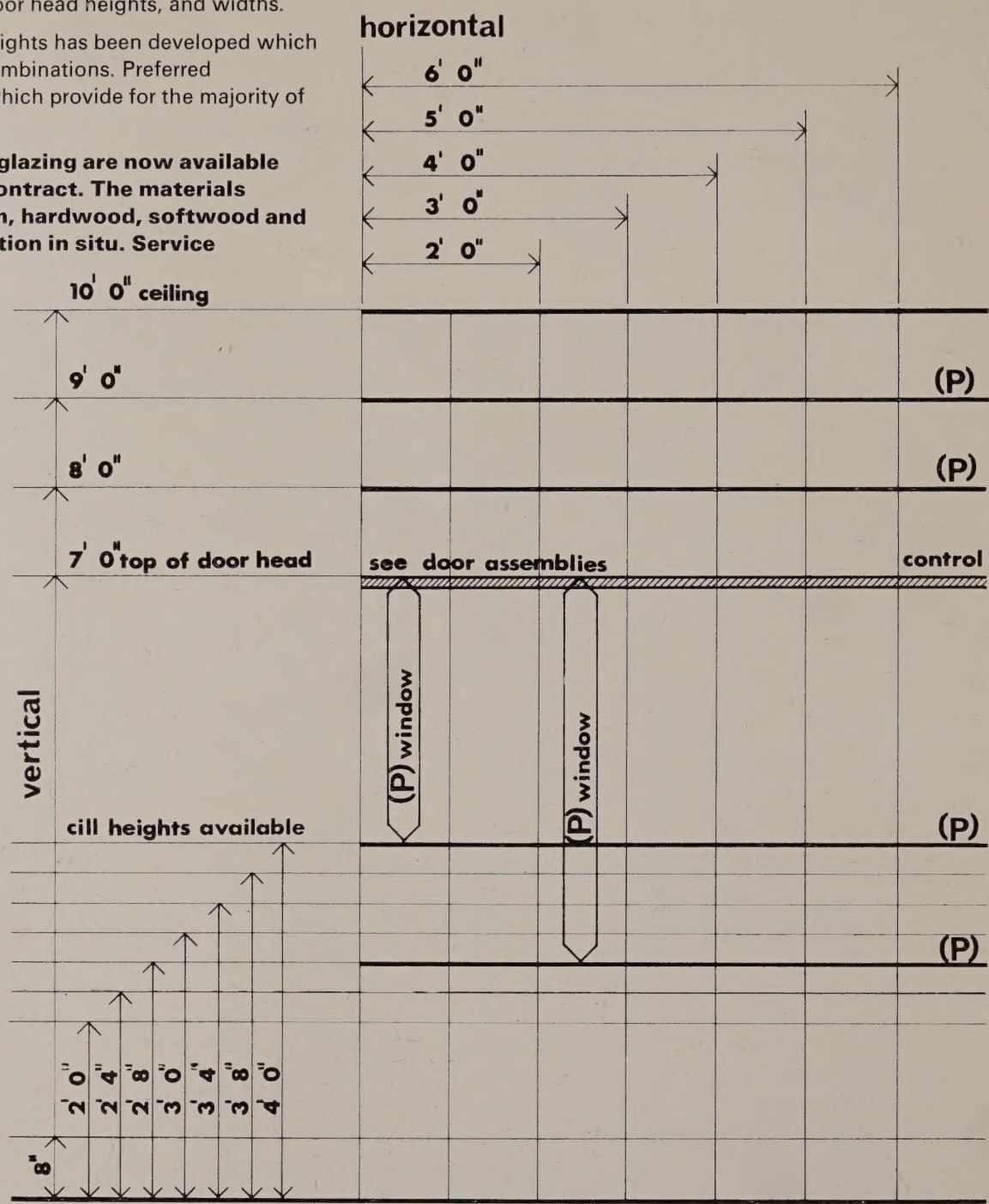
windows

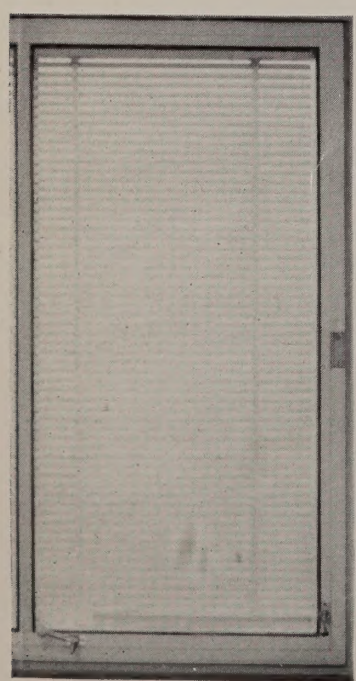
1. The aim of this Group has been to produce an economical and readily available range of windows in types and sizes suitable for hospital purposes, and which require the least amount of site labour for fixing.

2. The Group concentrated on the production of performance specifications and dimensions based on the preferred floor to ceiling heights, cill heights, door head heights, and widths.

3. A range of fixed and opening lights has been developed which can be used either singly or in combinations. Preferred assemblies have been selected which provide for the majority of requirements of hospitals.

4. **These windows including glazing are now available on a supply, deliver and fix contract. The materials available are steel, aluminium, hardwood, softwood and plastic. Some require decoration in situ. Service contracts are also available.**





ceilings

1. This Group has identified in its report the practical requirements upon which performance specifications for ceilings, either as a finish or suspended, and the production of a specification has been commissioned.

2. In its study the group concentrated on the following :

preferred dimensions for the structure and service zone above the ceiling ;

a preferred range of standard panel or tile sizes ;

methods of suspension ;

access to services ;

fire resistance ;

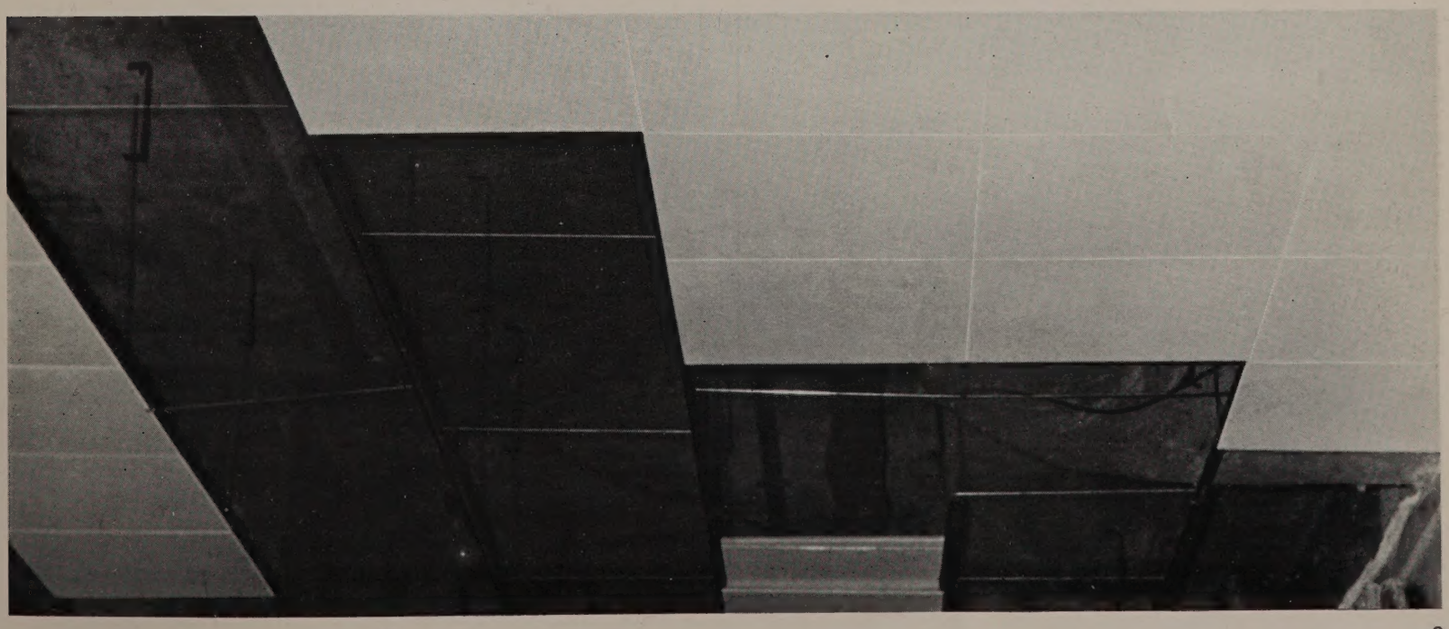
sound absorption ;

sound transmission between adjoining rooms in the void above the ceiling and partition ;

surface finishes for cleanliness, maintenance and appearance ;

incorporation of rationalised and dimensionally co-ordinated lighting fittings.

3. **The performance specification should be available during 1966 and manufacturers and erectors will be invited to develop economical solutions to the requirements either from existing proprietary or by new systems.**



signposts

1. The aim of the Group has been to develop a system which ensures that:

signs are conspicuous and legible; information is consistent in wording and easily grasped;

signs arrest the attention, even of people who are worried or suffering from poor eyesight.

2. The system provides that:

signs are suspended or mounted at right angles to the line of movement;

each sign has its own plank. Signs at the same point are presented as a bank of signs;

lettering is in white on six background colours:

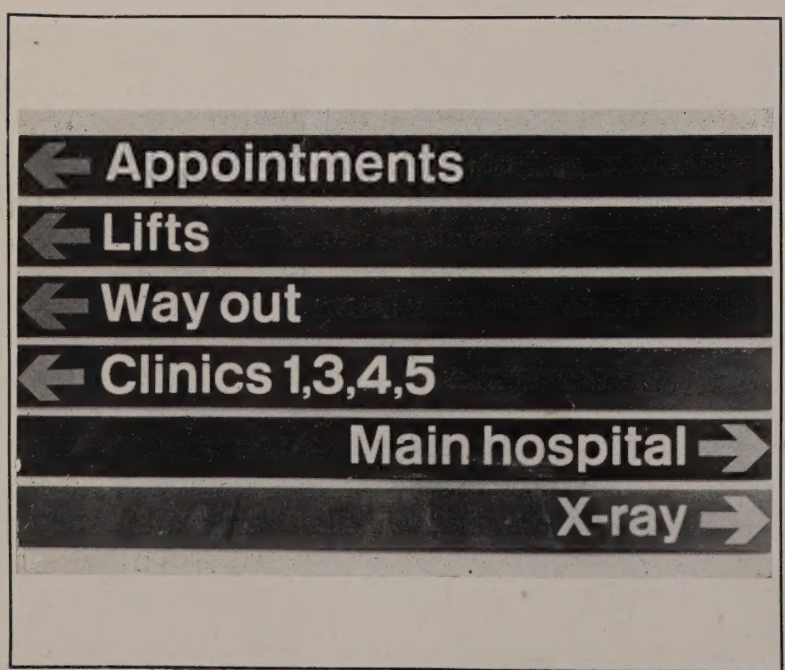
blue, green, purple, yellow, red, grey;

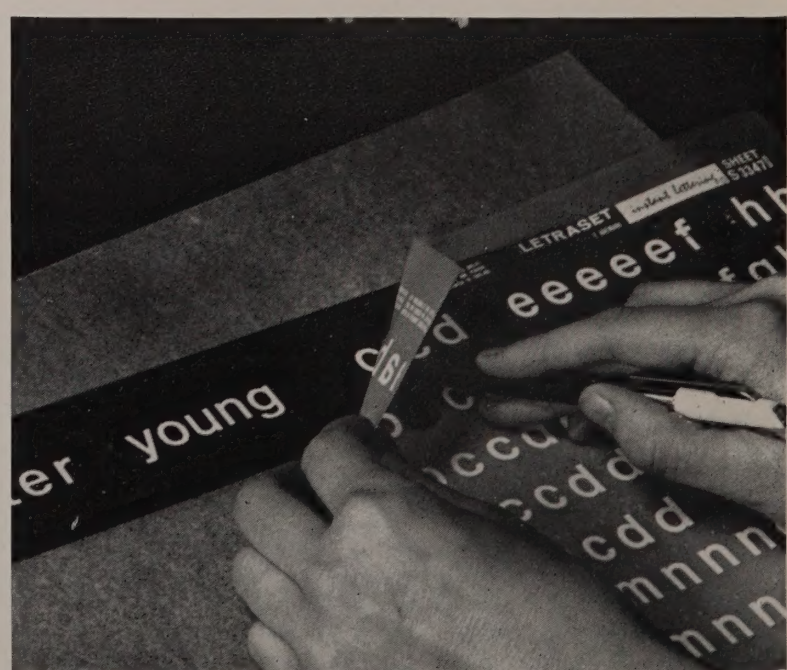
there is a range of standard sizes for both internal and external signs;

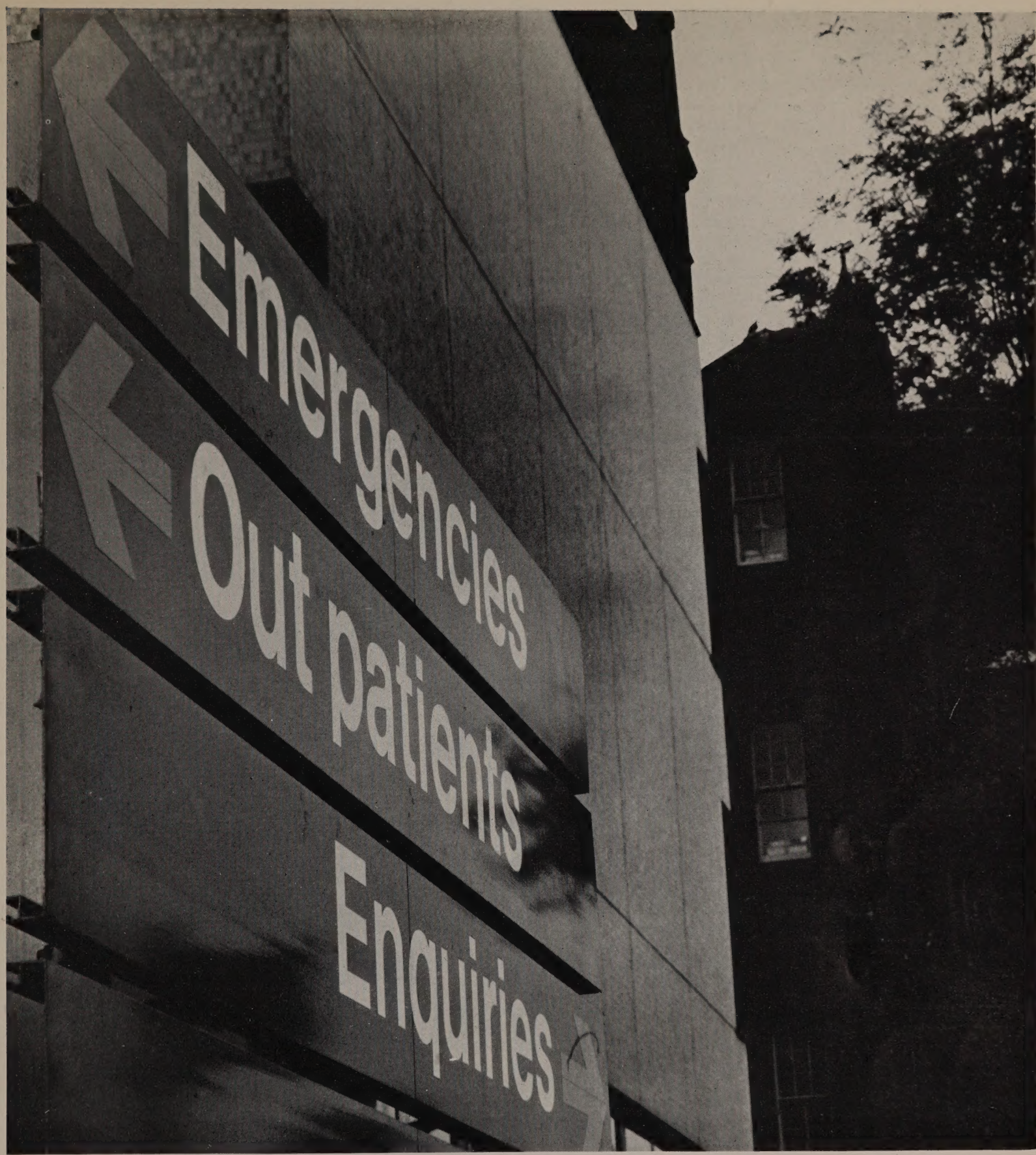
simple direct words are used from a recommended vocabulary.

3. **A kit is available to make up temporary signs in the same format to match the permanent signs.**

4. **A standard range of signs for both internal and external use is now available on a supply only basis.**






Emergencies
Out patients
Enquiries

Emergencies
Out patients
AMBULANCE

storage

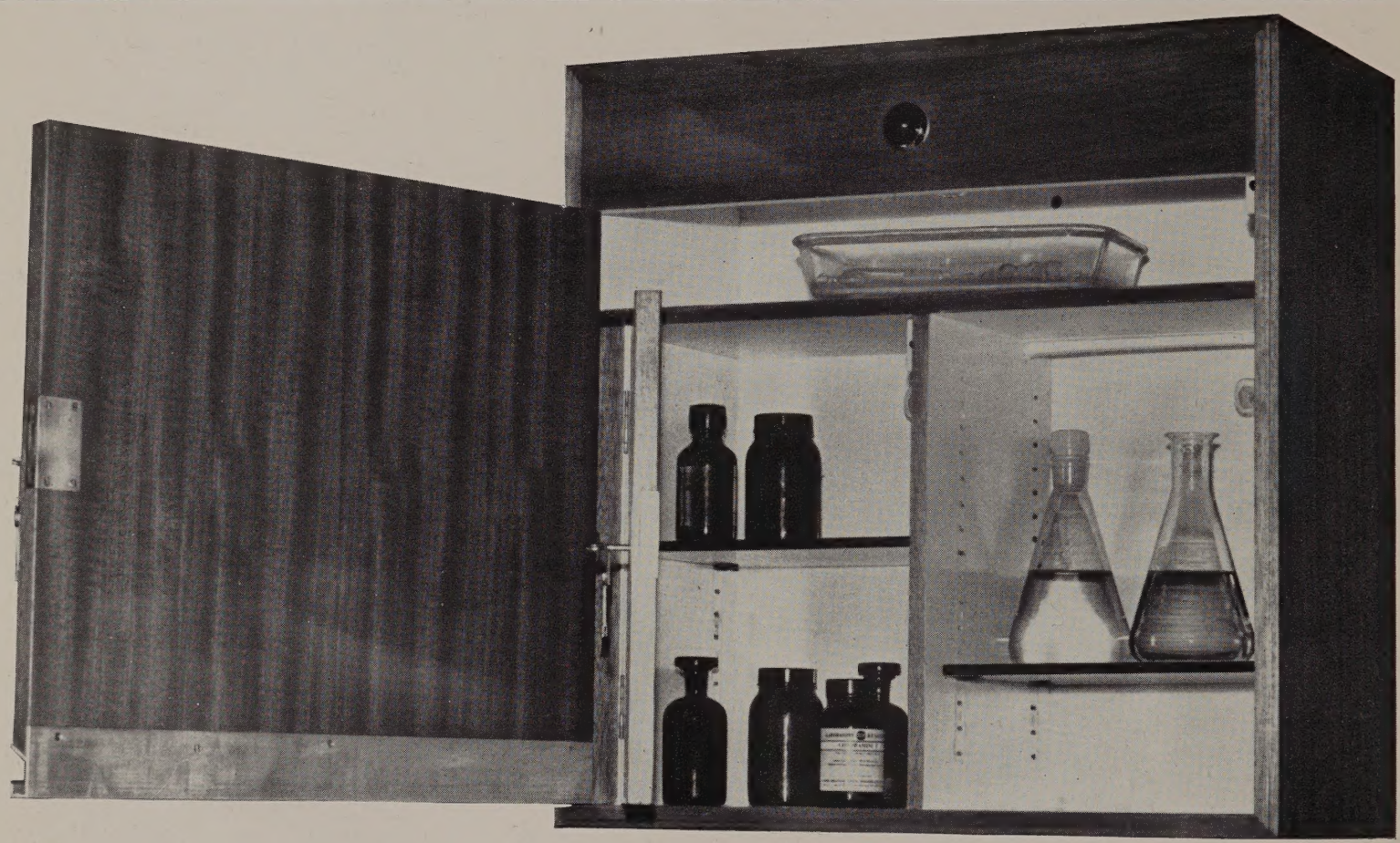
1. The aim of this Group was the production of a range of storage units initially designed in wood, which would be suitable for the majority of storage conditions required in hospitals, be capable of bulk production and yet provide maximum flexibility in use.

2. The units consist of:

a range of shells which can be fixed to the wall at high level or mounted on a plinth, or suspended from a worktop;

a range of bench tops which can be supported by the units or have their own framing;

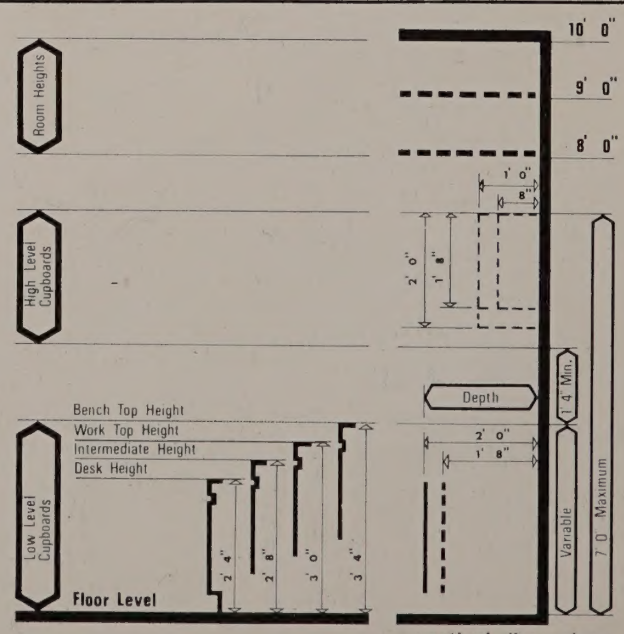
a range of plinths for use with the floor mounted units. These can be fitted with castors.

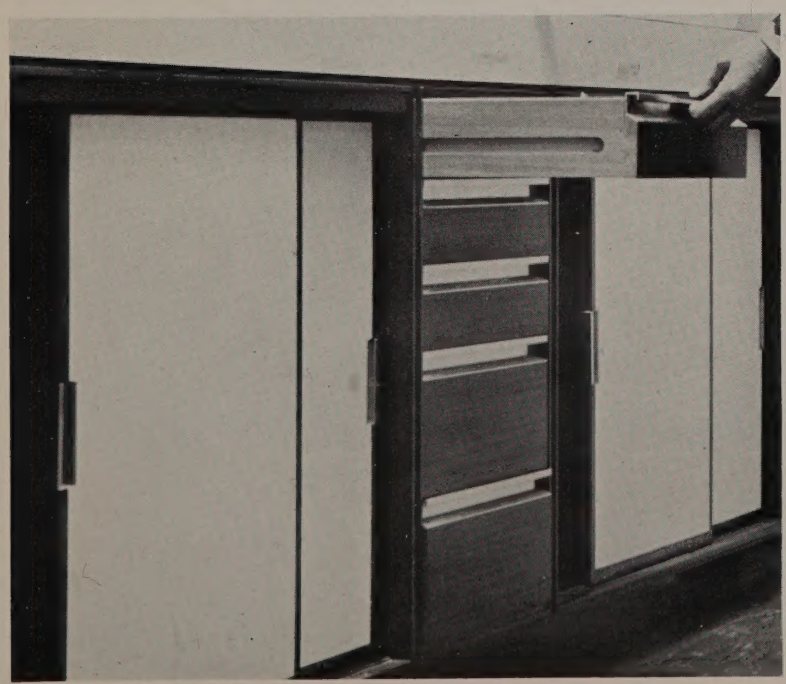


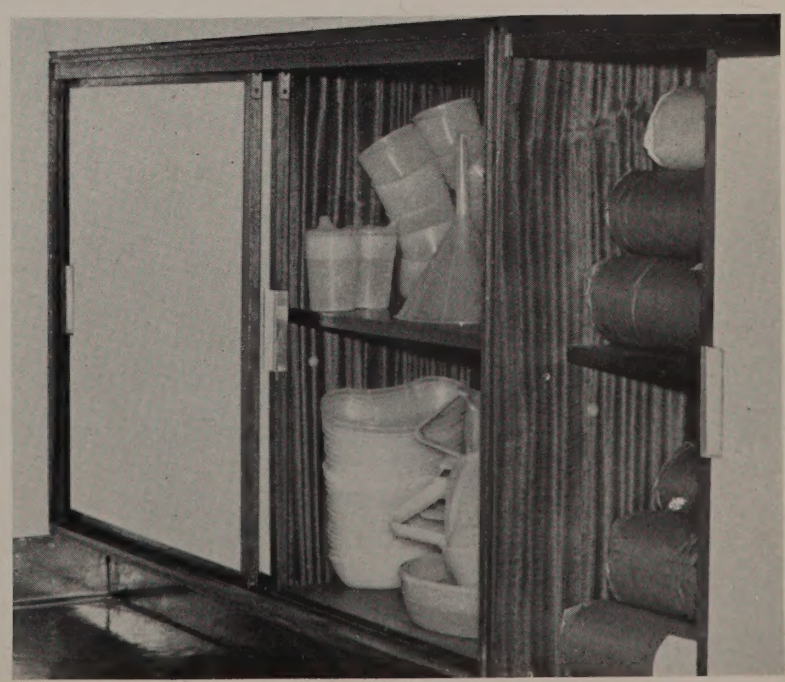
The shells can be fitted out with a variety of standard interchangeable components such as hung and sliding doors. different shelves, drawers, plastic trays and moulded plastic liners.

3. The use of materials other than wood is being studied.

4. **The range of units is available on a supply only or supply and fix basis.**







floors

1. The aim of this Group was to select flooring materials suitable for hospitals by examining :

cost

appearance

durability

dimensional stability

resilience and sound absorption

safety

hygiene

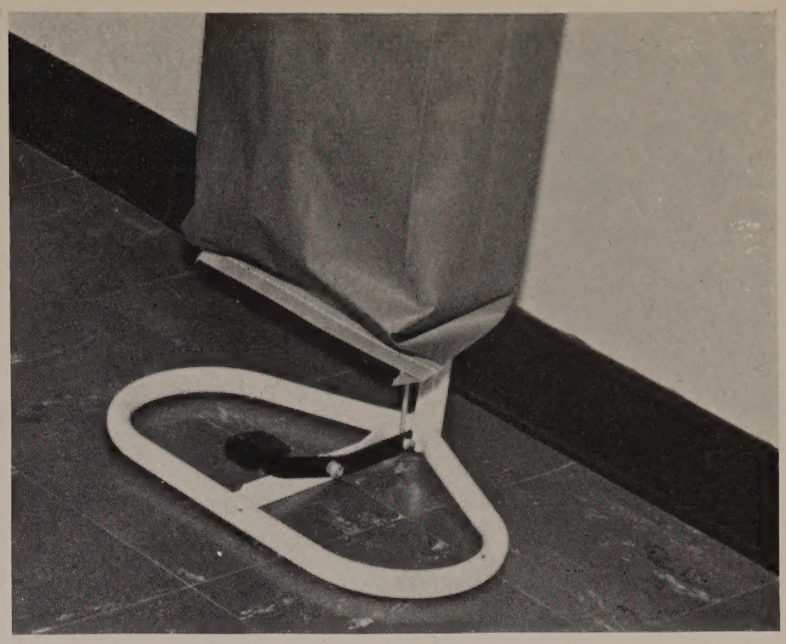
maintenance

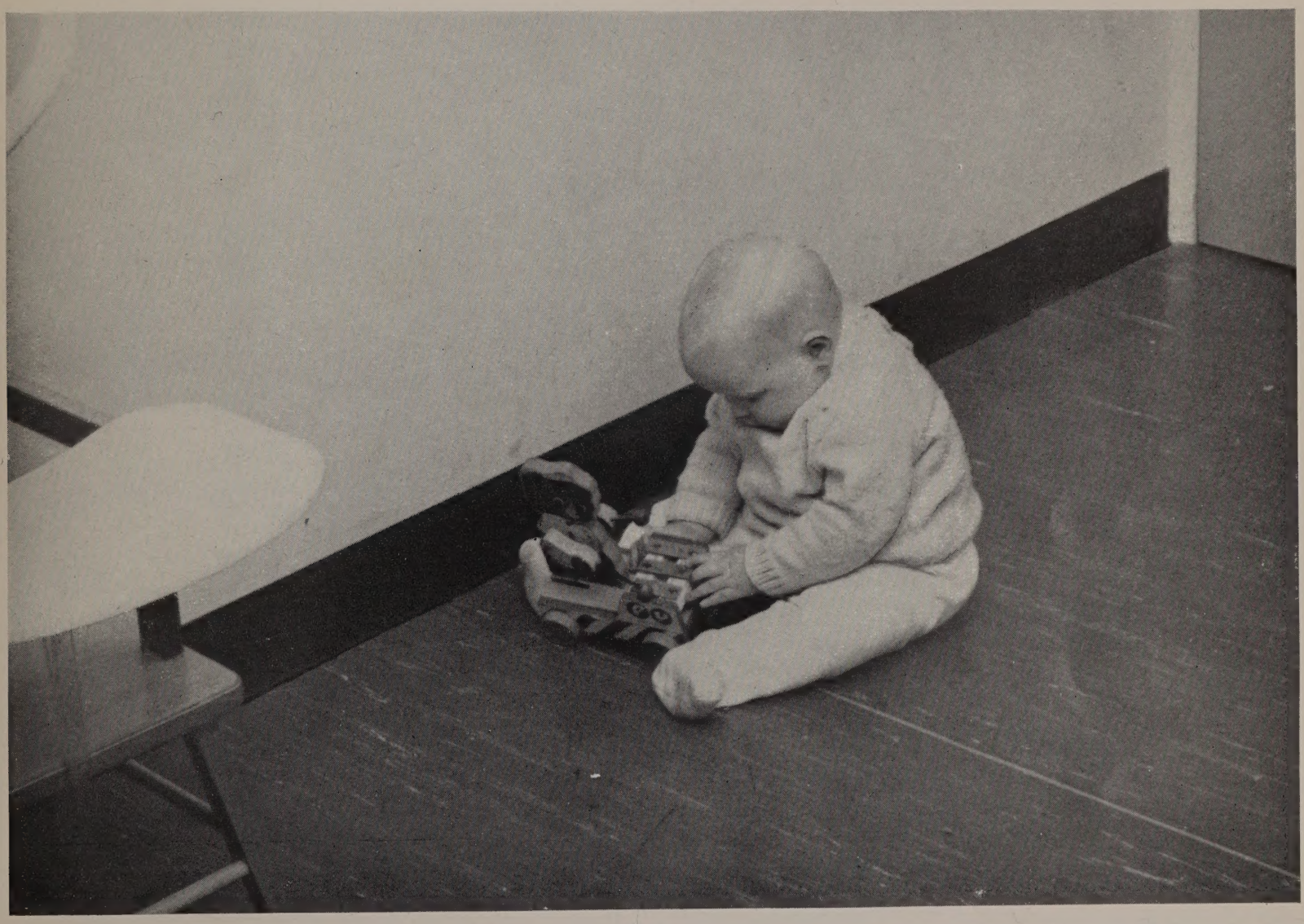
2. The widest range of functional requirements in hospitals is satisfied by:

Flexible PVC in two thicknesses, in sheet and tile form, and in resilient-backed PVC sheet.

Vinyl-asbestos tiles in three thicknesses.

Linoleum in sheet or in tile form, in various thicknesses.





3. **A range of floor finishes with appropriate skirtings is available on a supply, deliver, lay and fix basis from manufacturers or their authorised agents.**

sanitary fittings and assemblies

1. The aim of this Group is to produce, in conjunction with manufacturers, performance specifications for a limited range of sanitary fitting assemblies, namely

water closets

basins

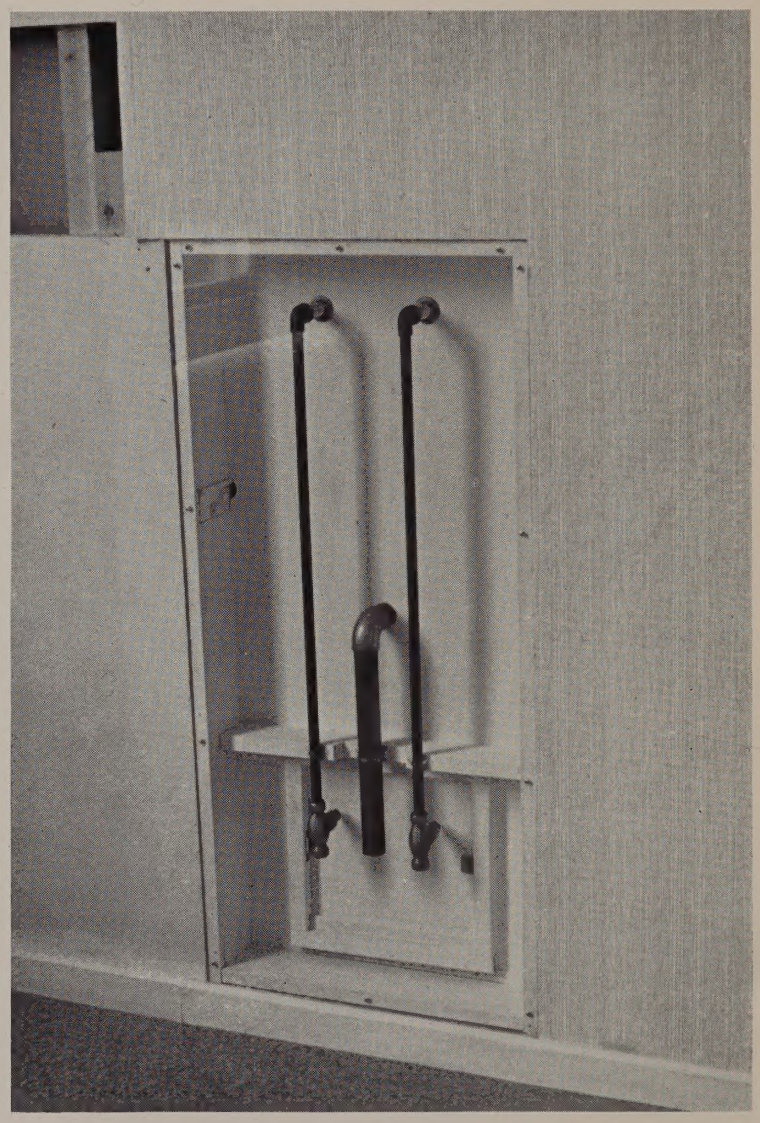
baths

showers

urinals

bidets

sinks and other ancillary equipment, etc.



2. The specifications cover:

function

resistance to wear

resistance to bacterial and chemical attack

efficient and simple cleansing

fixings to partitions

fittings, valves, taps, wastes, etc.

3. The assemblies will be dimensionally co-ordinated with the IBSG partitions and with the data produced by the User Requirement Group.

4. The result of the Group's work will be issued during 1966 so that manufacturers can use it for developing actual components.

structures

1. In 1964 this Group produced a report outlining basic dimensional and functional criteria for building structures, and stressing the particular need in hospitals for integration of mechanical services.

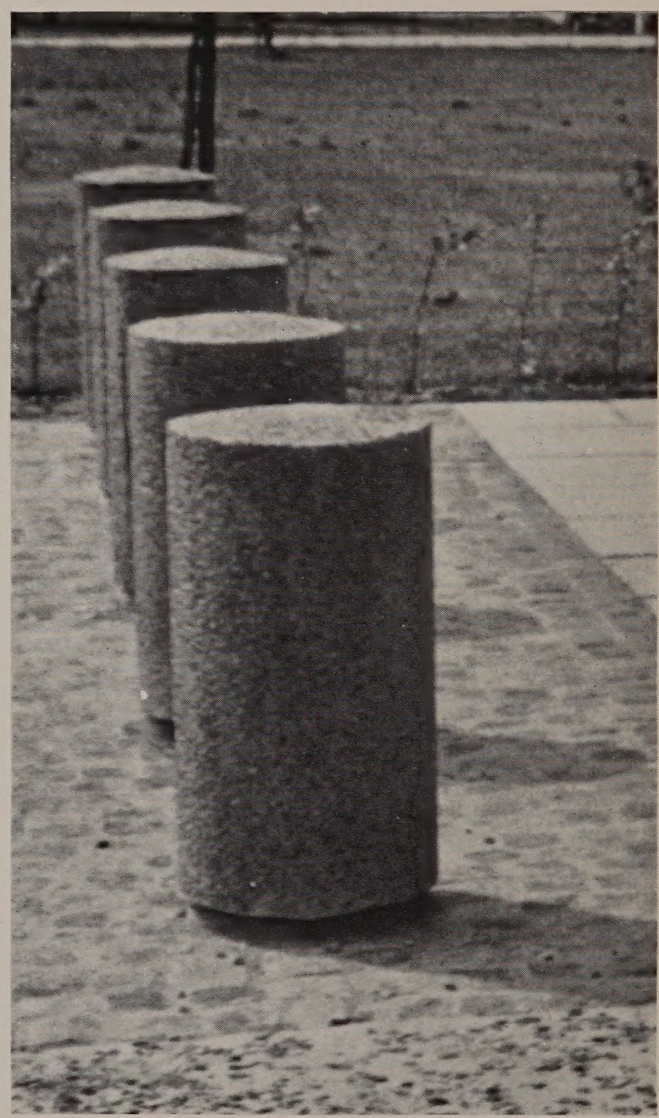
2. Following this study, a team has been investigating the production of detailed performance specifications for ranges of interchangeable structural components coupled with ranges of assemblies of mechanical services to allow for a choice of structural and engineering designs and solutions.

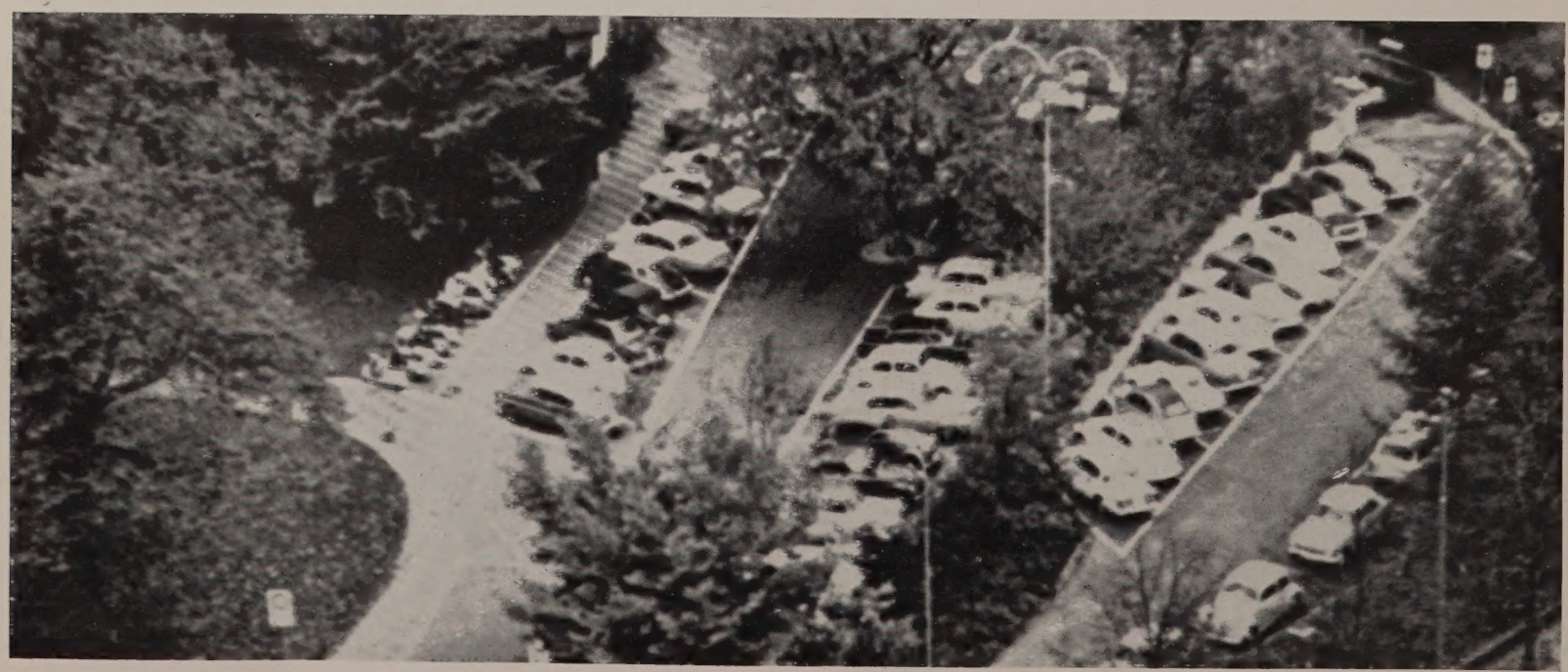
external works

1. External works include roads, footpaths, car parks, street lighting, drainage, landscaping and supply services of all kinds. External works give the hospital building its 'character 'in the locality in which the hospital is placed.

2. The work of hospital architects and engineers can be simplified by the recommendations of the IBSG for a limited range of complementary external works components including such minor items as railings and bollards.

3 .The need for standardisation and economy in external works components does not conflict with the importance of providing for informal and natural settings for hospitals based directly upon the natural features of the locality. The work of the Group led to a new assessment of the importance of landscaping techniques for hospital grounds, and this work is being developed by King Edward's Hospital Fund for London, which is collaborating with the Ministry of Health in the production of guidance material on hospital landscape construction and maintenance. The result of the Group's work will be issued during 1966 so that manufacturers can use it for developing components.





user requirements

1. The Group on User Requirements had the following terms of reference:

to study the activities taking place in the hospital and to establish most efficient layouts for equipment, furniture and working areas;

to reduce as far as possible the variety of spaces and layouts, so facilitating flexibility in use and interchangeability of spaces.

2. The Group first analysed, in accordance with these terms of reference, the rooms scheduled in Hospital Building Notes[1]. They found that a high proportion of rooms are common to many departments: the remaining rooms being special to particular departments. The 'common' rooms were studied first on the basis of the terms of reference, and this part of the Group's work is now completed: the Group is now turning its attention to the 'special rooms'.

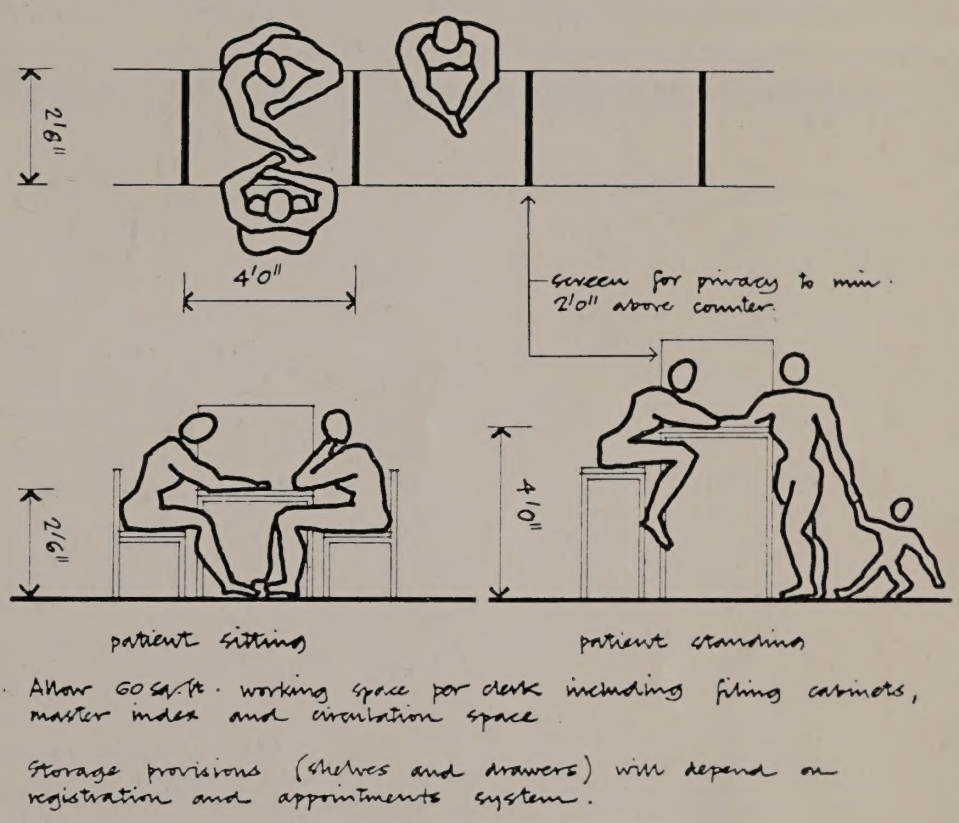
3. In analysing activities, anthropometric data provided by Dr Floyd of the Department of Ergonomics and Cybernetics at Loughborough College of Technology has been applied. This enabled the work to go beyond previous attempts to link activities to space and equipment requirements and so establish a rational foundation for the sizing, design, location and use of hospital spaces and equipment.

4. The results of study of each room are being presented in two sections:

Section 1
A description for each space of its functions, location and activities and services within it with diagrams and recommendations on dimensions. This would be used by the designers at the early planning stages.

Section 2
A summary of the equipment, services and components needed. This would be coded so that master schedules can be prepared.

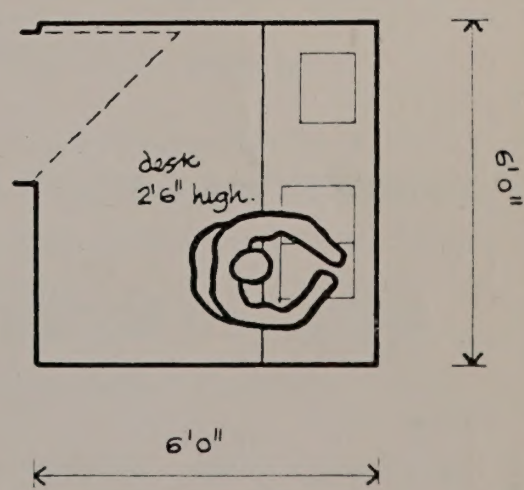
5. The material produced by the Group will be published in loose leaf booklets, so that it can be used in different combinations for particular facilities and also so that additional and amended information can be easily inserted.



A sample of a piece of data is as follows:

Reception areas
Reception clerks serving outpatient clinics, etc, will require desks. The size and storage may vary but a 5' 0" long desk with twin pedestals should be adequate.
Reception clerks working at counters where patients will stand will require the illustrated minimum layout. The working area and storage will vary.

Dictation cubicles
Cubicles may be required for consultants to dictate notes into portable dictaphones or into a system linked with the telephones. A desktop minimum 6' 0" long allowing spreading space for case-notes, desk chair and a telephone are required.



[1] Published by H.M.S.O.

communications

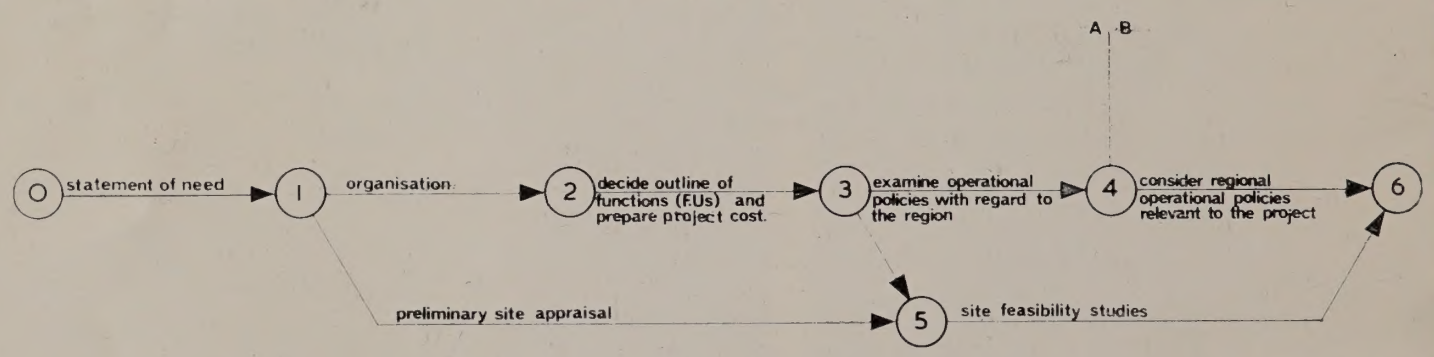
1. The Group studied techniques for communicating information between the groups of people involved in a hospital building project.

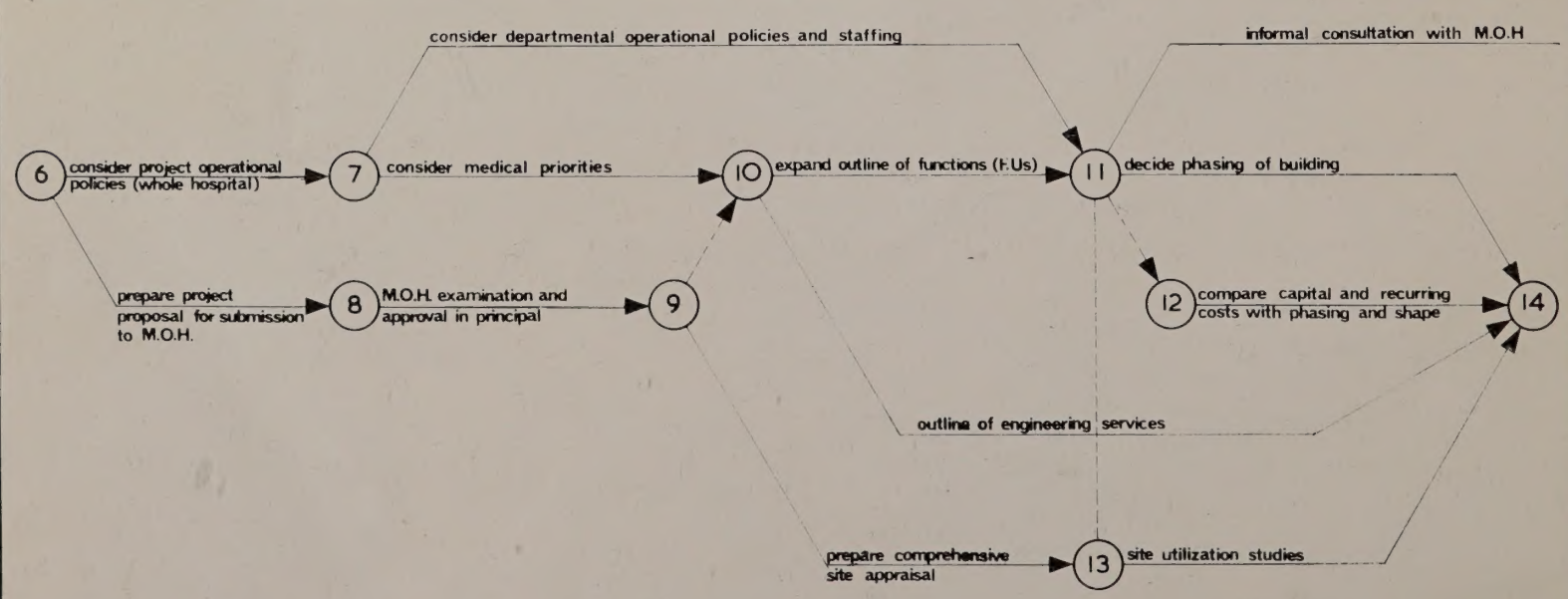
2. The Group emphasised two points: responsibilities should be clearly defined and allocated to specified people;

any tools or techniques which could be used to simplify, clarify and standardise the communication process should be considered.

3. The illustration shows part of a schematic network of the sequence of work in the early stages of a hospital building project. The technique of Network Analysis is now being widely used in hospital planning, design and construction.

Design team operations network stages A and B





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Ministry of Health

The following hospital guidance documents have been issued :

Prices in brackets include postage.

Binders for these series (except for Bulletins) are available price 6s 0d (6s 10d)

Ministry of Health hospital guidance publications include : Hospital Building Notes ; Equipment Notes ; Design Notes ; Building Bulletins and Technical Memoranda

Government publications can be purchased from the Government Bookshops in London (post orders to PO Box 569, SE1) Edinburgh, Cardiff, Belfast, Manchester, Birmingham and Bristol, or through any bookseller.

Hospital Building Notes

1	Buildings for the hospital service	out of print
2	The cost of hospital buildings	4s 0d (4s 6d)
3	The district general hospital	out of print
4	Ward units	revision in prep
5	Short stay psychiatric unit	out of print
6	Diagnostic X-ray department	revision in prep
7	Accommodation for nursing staff	out of print
8	Physiotherapy department	out of print
9	Occupational therapy department	1s 3d (1s 6d)
10	Kitchens	2s 0d (2s 5d)
11	Dining rooms	1s 3d (1s 8d)
12	Out-patient department	1s 6d (1s 11d)
13	Central sterile supply department	1s 6d (1s 9d)
14	Training school for nurses	1s 6d (1s 9d)
15	Pathology department	2s 0d (2s 5d)
16	Boiler house and steam boiler plant	2s 0d (2s 5d)
17	Deep plan (race track) ward units	2s 0d (2s 5d)
18	Administrative department	2s 6d (2s 11d)
19	Department of medical photography and medical illustration	1s 9d (2s 3d)
20	Mortuary and post-mortem room	1s 9d (2s 2d)
21	Maternity department	4s 6d (5s 0d)
22	Accident and emergency department	4s 6d (5s 0d)
23	Children's ward	2s 6d (2s 11d)
24	Residential accommodation for staff	2s 6d (2s 11d)
25	Laundry	3s 6d (3s 11d)
30	Accommodation for psychiatric patients	1s 6d (1s 11d)
31	Psychiatric ward (type 1)	2s 0d (2s 5d)
32	Psychiatric ward (type 2) and pre-discharge (hostel type) ward	3s 6d (4s 0d)

Acknowledgements

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Hospital Design Notes

1	Dimensional co-ordination and industrialised building	3s 0d (3s 5d)
2	Protection against fire	2s 0d (2s 5d)

Hospital Technical Memoranda

1	Anti-static precautions : rubber, plastics and fabrics	1s 0d (1s 3d)
2	Anti-static precautions : flooring in anaesthetising areas	1s 3d (1s 8d)
3	Fire precautions : fish fryers	1s 0d (1s 3d)
4	Colour code of flexible cables and cords	6d (9d)
5	Steam boiler plant instrumentation	1s 6d (1s 9d
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14	Abatement of electrical interference	4s 0d (4s 5d)

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